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Summary – SkipList Project

Introduction:

A skip list is a data structure that is used for storing a sorted list of items with a help of hierarchy of linked lists that connect increasingly sparse subsequences of the items. A skip list allows the process of item look up in efficient manner. The skip list data structure skips over many of the items of the full list in one step, that's why it is known as skip list.

Structure of Skip List:

A skip list is built up of layers. The lowest layer (i.e. bottom layer) is an ordinary ordered linked list. The higher layers are like 'express lane' where the nodes are skipped.

Analysis:

X-axis is number of keys and Y-axis is average time taken to complete that operation in nano seconds.

Scale:- X-axis : 0 – 132000 keys Y-axis : 0 – 10,000,000 nano seconds



Time Complexity:

1. Insert operation takes $O(\log n)$ time for average case.
2. Find operation takes $O(\log n)$ time for average case.
3. Delete operation takes $O(\log n)$ time for average case.
4. ClosestKeyAfter operation takes $O(\log n)$ time for average case.